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APR 23 1970

CURRENT SERIAL RECORDS

# **WATER SUPPLY OUTLOOK FOR MONTANA**

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE,

and  
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF  
APR. 1, 1970



## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

## PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Building, Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 340, Casper, Wyoming 82601

## PUBLISHED BY OTHER AGENCIES.

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



# **WATER SUPPLY OUTLOOK FOR MONTANA**

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

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WATER SUPPLY OUTLOOK FOR MONTANA  
April 1, 1970

\* Should irrigation reservoirs be operated to provide some flood \*  
\* control, reduce streambank erosion, and improve fish habitat \*  
\* when this operation does not interfere with or reduce irriga- \*  
\* tion supplies? \*

\* \* \* \* \*  
\* The mountain snowfall during March was well above \*  
\* average over all Montana. Increases of 6 to 12 \*  
\* inches water were common. The central and south- \*  
\* central Montana snow pack is maximum of record \*  
\* for this date. In contrast, snow pack in the \*  
\* Kootenai River headwaters is near minimum of \*  
\* record. \*  
\* \* \* \* \*

COLUMBIA RIVER DRAINAGE

Snow - The monthly increase in snow cover was well above average over most of the drainages. Exceptions were the Kootenai and along the Montana-Idaho border in the Clarks Fork drainage, where only slightly above average amounts were recorded. Over the Flathead drainage, mountain snow pack is about 10 percent above average with some below average readings in the North Fork drainage. The Clark Fork, including the Bitterroot is near average. There are some deficiencies along the Idaho line north of Lolo Pass and along the Continental divide in the Blackfoot River headwaters.

Streamflow - Near average runoff is forecast for headwater streams in the Clark Fork and Bitterroot drainages. Downstream tributaries are 10 to 15 percent lower. Flathead drainages are expected to be within 10 percent of average, as is the Blackfoot. Kootenai flow will be 15 to 20 percent below average. Late season irrigation supplies are expected to be near average.



## MISSOURI RIVER DRAINAGE

Snow - Mountain snowfall during March was heavy over most of the area. The northern part of the Gallatin and Bridger ranges, Castle, Little Belt, Snowy and the Crazy mountains have maximum snow pack of record for this date. In the Jefferson, Madison, upper Gallatin, Sun, Marias, Teton, Milk and St. Mary drainages, snow pack is near to a little above average. Snow cover continues to be below average along the Continental divide west of Helena.

Streamflow - Large volumes are forecast for the Gallatin, Smith, Belt, Judith and Musselshell drainages. Soils beneath the snow in these areas are wetter than normal. Snowmelt will keep streambanks full for longer than the normal period and any prolonged rainfall will cause rivers to leave their banks. Reservoirs should be regulated to hold down levels until the main runoff period. Other streams in the Missouri headwaters are forecast to have near or above average runoff. Late season irrigation water supplies are expected to be near or above average.

## YELLOWSTONE RIVER DRAINAGE

Snow - Over much of the area, mountain snowfall was heavy. The largest increases were noted in the Red Lodge area and on the northern part of the Big Horn mountains.

Streamflow - Above average runoff can be expected on all streams in the Yellowstone drainages. Late season irrigation supplies should be above average. No serious problems are expected from high water unless prolonged periods of rain occur during the main melt period.





# SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF:	
		Last Year	Average

## COLUMBIA RIVER DRAINAGE

Kootenai	18	74	79
Flathead	27	108	110
Upper Clark Fork	24	83	96
Lower Clark Fork	16	88	95
Bitterroot	13	96	98

## MISSOURI RIVER DRAINAGE

Jefferson	28	87	113
Madison	23	86	110
Gallatin	14	143	140
Missouri Main Stem	10	114	119
Judith-Musselshell	9	164	146
Marias-Teton-Sun	11	113	107
St. Mary	3	109	97
Milk (Headwaters)	4	111	100
Milk (Cypress Hills, March 1)	4	92	140

## YELLOWSTONE RIVER DRAINAGE

Yellowstone	24	134	133
Little Big Horn	7	191	159



# SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

## COLUMBIA RIVER BASIN

### Kootenai

Baree Trail	3800	48	7.5	4/01	6.5	6.8	6.4
Murphy Lake R. S.	3000	48	22.6	4/01	21.1	20.1	21.3
Raven R. S.	3050	48	23.0	4/02	21.5	22.0	21.8

### Flathead

Desert Mountain	5600	54	8.4	3/27	6.4	8.7	7.6
Marias Pass	5250	54	6.5	3/28	4.8	5.7	5.6

### Clark Fork

Black Pine	7100	48	10.0	3/31	7.4	7.9	7.3
Seeley Lake R. S.	4030	48	11.9	4/07	8.3	11.9	9.9
Skalkaho Summit	7260	48	10.8	4/02	9.4	9.8	9.7

### Bitterroot

Gibbons Pass	7100	48	7.1	3/31	3.7	5.7	5.4
Lolo Pass	5250	48	10.6	3/27	5.0	6.5	6.5

## MISSOURI RIVER BASIN

### Beaverhead

Lakeview	6700	48	15.3	3/31	5.8	7.4	8.1
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### Madison

West Yellowstone	6700	48	6.5	3/28	1.5	2.9	-
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### Gallatin

Bridger Bowl	7250	48	17.0	3/31	16.4	16.8	16.2
College Site	4856	54	14.5	4/03	15.2	13.6	12.1
Lick Creek	6860	48	18.8	3/30	17.3	17.1	17.2
Twenty-One Mile	7150	48	10.0	3/28	1.9	6.7	3.6

### Missouri Main Stem

Kings Hill	7420	48	11.8	4/01	6.3	7.3	7.2
Stemple Pass	6350	48	5.9	3/31	3.6	4.2	4.6

### Milk

Beaver Creek	3950	48	20.9	3/31	18.1	-	-
Rocky Boy	4700	36	10.1	3/31	7.3	-	-

### Yellowstone

Battle Ridge	6020	48	17.6	3/31	13.5	14.2	14.0
Northeast Entrance	7350	48	9.4	3/29	5.0	7.2	6.5

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# RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average

## COLUMBIA RIVER BASIN

Flathead	Hungry Horse	3,428.0	1,993.0	2,201.0	2,077.0
	Flathead Lake	1,791.0	726.5	765.9	746.7
	Camas (4)	45.2	19.9	15.8	30.1
	Mission Valley (8)	100.3	27.7	77.3	35.4
Clark Fork	Georgetown Lake	31.0	24.8	24.9	22.1
	Noxon Rapids	334.6	183.5	250.1	188.0
Bitterroot	Como	34.9	13.0	21.6	13.4
	Painted Rocks	31.7	18.2	21.4	19.7
	Nevada	12.6		8.8	6.6

## MISSOURI RIVER BASIN

Beaverhead	Clark Canyon	328.9	144.8	152.9	135.6
	Lima	84.0	47.3	44.1	24.2
Ruby	Ruby	38.8	36.9	30.6	29.9
Madison	Hebgen Lake	377.5	266.3	295.4	176.7
	Ennis Lake	41.0	36.7	35.4	35.5
Gallatin	Middle Creek	8.0	4.4	4.0	3.9
Missouri	Canyon Ferry	2,043.0	1,558.0	1,469.0	1,546.0
	Hauser & Helena	61.9	62.5	73.1	50.5
	Lake Helena	10.4	10.7	10.7	7.3
	Holter Lake	81.9	78.0	71.1	54.7
	Smith River	10.7	5.5	8.0	7.0
	Durand	7.0	4.0	6.0	5.0
	Martinsdale	23.1	5.2	10.3	8.0
	Deadman's Basin	72.2	33.8	49.1	48.7
	Fort Peck	19,410.0	16,200.0	16,370.0	11,050.0
	Gibson	105.0	17.7	55.3	51.0
Sun	Willow Creek	32.3	20.6	23.1	22.0
	Pishkun	32.0	17.4	16.6	17.5
	Lower Two Medicine	16.6	-	12.6	0.0
Marias	Four Horns	19.2	-	12.6	12.2
	Swift	30.0	18.5	21.4	21.5
	Lake Frances	112.0	83.3	82.4	84.2
Milk	Tiber	1,347.0	525.3	501.8	643.7
	Fresno	127.2	75.1	134.9	82.1
	Nelson	66.8	44.4	42.5	40.2
Yellowstone	Lake Sherburne	66.1	19.6	28.1	22.8
	Mystic Lake	20.8	3.8	5.2	5.0
	Tongue River	68.0	39.1	52.6	28.7
Big Horn	Cooney	27.5	16.4	20.2	15.2
	Yellowtail	1,356.0	757.1	695.3	717.4



# STREAMFLOW FORECASTS

STREAMFLOW FORECASTS		THIS YEAR			PAST RECORD	
BASIN, STREAM and/or FORECAST POINT	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET		
	Thousand Acre Feet	Percent of Average		Last Year	Average	
COLUMBIA RIVER BASIN						
FISHER RIVER						
Libby (near)	250	84	Apr-Sept	358	298	
	235	84	Apr-July	343	281	
KOOTENAI RIVER						
Libby (at)	6400	80	Apr-Sept	9168	8025	
	5500	80	Apr-July	8230	6956	
YAAK RIVER						
Troy (near)	500	88	Apr-Sept		573	
	480	88	Apr-July		549	
KOOTENAI RIVER						
Leonia (at)	7160	78	Apr-Sept	10672	9198	
	6240	77	Apr-July	9626	8072	
	5000	77	Apr-June	7877	6463	
RACETRACK CREEK						
Anaconda (near)	32.7	96	Apr-Sept		34.1	
	26.1	95	Apr-July		27.6	
FLINT CREEK						
Boulder Creek (below)(3)	71.0	102	Apr-Sept	80.1	69.6	
	56.0	102	Apr-July	63.9	55.1	
MIDDLE FORK ROCK CREEK						
Philipsburg (near)	74.0	100	Apr-Sept		73.4	
	66.0	100	Apr-July		66.2	
NEVADA CREEK						
Finn (near)	16.0	77	Apr-Sept		20.7	
	15.0	78	Apr-July		19.3	
BLACKFOOT RIVER						
Bonner (near)	980	97	Apr-Sept	1079	1008	
	880	97	Apr-July	982	912	
	760	97	Apr-June	818	788	
CLARK FORK RIVER						
Milltown (above)(4)	770	102	Apr-Sept	889	755	
	670	103	Apr-July	786	659	
	577	103	Apr-June	614	562	
CLARK FORK RIVER						
Missoula (above)	1750	99	Apr-Sept	1968	1763	
	1550	99	Apr-July	1768	1572	
	1337	99	Apr-June	1432	1350	

(3) Sum Flint Creek at Maxville and Boulder Creek at Maxville.

(4) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.





# STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
WEST FORK BITTERROOT RIVER					
Conner (near)(5)	175	103	Apr-Sept	184	170
	162	103	Apr-July	174	158
EAST FORK BITTERROOT RIVER					
Conner (near)	162	95	Apr-Sept	143	170
	145	94	Apr-July	133	154
BITTERROOT RIVER					
Darby (near)	540	97	Apr-Sept	566	558
	500	97	Apr-July	535	517
	440	97	Apr-June	486	453
SKALKAHO CREEK					
Hamilton (near)	48.0	86	Apr-Sept	59.0	55.8
	42.0	86	Apr-July	52.5	48.9
BURNT FORK CREEK					
Stevensville (near)(10)	31.2	91	Apr-Sept	42.0	34.2
	27.0	91	Apr-July	37.1	29.6
BITTERROOT RIVER					
Missoula (at)(6)	1320	90	Apr-Sept	1503	1466
	1225	90	Apr-July	1432	1360
	1060	90	Apr-June	1287	1175
CLARK FORK RIVER					
Missoula (below)	3070	95	Apr-Sept	3471	3229
	2775	95	Apr-July	3200	2932
	2397	95	Apr-June	2719	2525
ST. REGIS RIVER					
St. Regis (near)	280	84	Apr-Sept		332
	267	84	Apr-July		316
CLARK FORK RIVER					
St. Regis (at)	3980	91	Apr-Sept	4687	4398
	3620	91	Apr-July	4332	3993
	3160	91	Apr-June	3724	3451
NORTH FORK FLATHEAD RIVER					
Columbia Falls (near)	1800	89	Apr-Sept	2004	2023
	1650	89	Apr-July	1860	1846
	1400	89	Apr-June	1618	1562
MIDDLE FORK FLATHEAD RIVER					
West Glacier (near)	1880	97	Apr-Sept	1644	1931
	1740	97	Apr-July	1542	1791
	1480	97	Apr-June	1217	1521
SOUTH FORK FLATHEAD RIVER					
Columbia Falls (near)(7)	2430	103	Apr-Sept	2130	2358
	2300	103	Apr-July	2015	2235
	2020	103	Apr-June	1780	1967

(5) Adjusted for storage in Painted Rocks Reservoir.

(6) Difference in observed flow Clark Fork above and below Missoula.

(7) Adjusted for storage in Hungry Horse Reservoir.

(10) Adjusted for diversion into Sunset Highline Canal.



# STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
FLATHEAD RIVER					
Columbia Falls (at)(7)	6230	96	Apr-Sept	5744	6467
	5800	96	Apr-July	5393	6003
	4950	96	Apr-June	4680	5155
SWAN RIVER					
Big Fork (near)	725	105	Apr-Sept	632	688
	640	105	Apr-July	565	607
	522	105	Apr-June	464	496
FLATHEAD RIVER					
Polson (near)(8)	7240	94	Apr-Sept	7296	7701
	6700	94	Apr-July	6856	7157
	5750	94	Apr-June	5924	6132
CLARK FORK RIVER					
Plains (near)(8)	11600	93	Apr-Sept	12388	12482
	10650	93	Apr-July	11504	11448
	9120	93	Apr-June	9877	9802
THOMPSON RIVER					
Thompson Falls (near)	252	89	Apr-Sept	320	283
	225	89	Apr-July	292	253
PROSPECT CREEK					
Thompson Falls (at)	135	89	Apr-Sept	161	152
	125	88	Apr-July	153	143
CLARK FORK RIVER					
Whitehorse Rapids (at)(9)	13000	93	Apr-Sept		13987
	11900	93	Apr-July		12787
	10200	93	Apr-June		10953

(7) Adjusted for storage in Hungry Horse Reservoir.

(8) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.

(9) Adjusted for storage in Hungry Horse, Flathead Lake and Noxon Rapids Reservoirs.

Table with 2 columns: Item Name, Price

Item 1	Price 1
Item 2	Price 2
Item 3	Price 3
Item 4	Price 4
Item 5	Price 5
Item 6	Price 6
Item 7	Price 7
Item 8	Price 8
Item 9	Price 9
Item 10	Price 10
Item 11	Price 11
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Item 98	Price 98
Item 99	Price 99
Item 100	Price 100



# STREAMFLOW FORECASTS

STREAMFLOW FORECASTS	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
BASIN, STREAM and/or FORECAST POINT					

## MISSOURI RIVER BASIN

RED ROCK RIVER					
Monida (near)(11)	95.0	120	Apr-Sept	158	79.1
	90.0	121	Apr-July	150	74.2
BEAVERHEAD RIVER					
Armstead (near)(11)(12)	129	122	Apr-Sept	215	106
	110	122	Apr-July	203	90.0
RUBY RIVER					
Alder (near)	100	125	Apr-Sept	111	80.0
	84.0	125	Apr-July	95.6	67.0
BIG HOLE RIVER					
Melrose (near)	774	112	Apr-Sept	828	690
	720	112	Apr-July	787	642
BIRCH CREEK					
Glen (near)	15.2	116	Apr-Sept	18.7	13.1
	12.8	116	Apr-July	16.0	11.0
BOULDER RIVER					
Boulder (near)	83.5	106	Apr-Sept	102	78.9
	80.0	106	Apr-July	97.8	75.5
JEFFERSON RIVER					
Sappington (at)(12)	1080	114	Apr-Sept	1285	948
	980	114	Apr-July	1208	857
WILLOW CREEK					
Harrison (near)	19.2	124	Apr-Sept		15.1
	17.5	123	Apr-July		14.2
MADISON RIVER					
West Yellowstone (near)	220	104	Apr-Sept	241	212
	168	105	Apr-July	183	160
MADISON RIVER					
Grayling (near)(13)	452	105	Apr-Sept	573	430
	356	106	Apr-July	464	337
MADISON RIVER					
McAllister (near)(14)	865	118	Apr-Sept	962	734
	701	119	Apr-July	778	587
GALLATIN RIVER					
Gateway (near)	605	131	Apr-Sept		461
	520	132	Apr-July		393

(11) Adjusted for storage in Lima Reservoir.

(12) Adjusted for storage in Clark Canyon Reservoir.

(13) Adjusted for storage in Hebgen Lake.

(14) Adjusted for storage in Hebgen and Ennis Lakes.



# STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
HYALITE CREEK					
Bozeman (near)(15)	57.0	152	Apr-Sept		37.4
	50.0	154	Apr-July		32.5
GALLATIN RIVER					
Logan (at)	754	159	Apr-Sept		473
	640	159	Apr-July		401
MISSOURI RIVER					
Toston (at)(16)	2680	127	Apr-Sept		2105
	2340	127	Apr-July		1836
SHEEP CREEK					
White Sulphur Springs (near)	27.0	147	Apr-Sept		18.4
	23.5	147	Apr-July		16.0
SMITH RIVER					
Eden (near)	330	184	Apr-Sept		179
	302	184	Apr-July		165
SUN RIVER					
Gibson Dam (at)(17)	600	99	Apr-Sept	509	604
	550	99	Apr-July	467	555
BELT CREEK					
Monarch (near)	196	180	Apr-Sept		109
	180	180	Apr-July		100
MISSOURI RIVER					
Fort Benton (at)(18)	4200	126	Apr-Sept		3321
	3580	126	Apr-July		2834
TWO MEDICINE CREEK					
Browning (near)(19)	240	94	Apr-Sept		256
	230	94	Apr-July		245
BADGER CREEK					
Browning (near)	121	91	Apr-Sept		133
	105	91	Apr-July		116
CUT BANK CREEK					
Cut Bank (at)	112	94	Apr-Sept		120
	104	94	Apr-July		111
MARIAS RIVER					
Shelby (near)(20)	550	91	Apr-Sept	474	604
	530	91	Apr-July	472	581

(15) Adjusted for storage in Middle Creek Reservoir.

(16) Adjusted for storage in Hebgen and Ennis Lakes and Clark Canyon Reservoir.

(17) Adjusted for storage in Gibson Reservoir and diversions.

(18) Adjusted for storage in Canyon Ferry Reservoir.

(19) Adjusted for storage in Two Medicine Reservoir and diversions into Two Medicine Canal.

(20) Adjusted for storage in Two Medicine, Four Horns, Lake Frances and Swift Reservoirs.

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# STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
MISSOURI RIVER					
Virgelle (at)(21)	4850	120	Apr-Sept		4036
	4220	120	Apr-July		3511
SOUTH FORK JUDITH RIVER					
Utica (near)	26.3	211	Apr-Sept		12.5
	24.7	211	Apr-July		11.7
MISSOURI RIVER					
Landusky (near)(21)	5350	120	Apr-Sept		4484
	4650	120	Apr-July		3889
NORTH FORK MUSSELSHELL RIVER					
Delpine (near)	9.4	170	Apr-Sept		5.5
	8.0	170	Apr-July		4.7
SOUTH FORK MUSSELSHELL RIVER					
Martinsdale (above)	73.6	159	Apr-Sept		46.2
	70.0	159	Apr-July		44.0
MISSOURI RIVER					
Fort Peck Dam (below)(22)	5180	120	Apr-Sept		4312
	4600	120	Apr-July		3824
MILK RIVER					
Eastern Crossing (at)	256	98	Apr-Sept		262
MISSOURI RIVER					
Wolf Point (near)(22)	5500	117	Apr-Sept		4683
	4900	117	Apr-July		4146
MISSOURI RIVER					
Williston, N.D. (near)(29)	12800	116	Apr-Sept		10998
	11400	116	Apr-July		9823

## SASKATCHEWAN RIVER BASIN

ST. MARY RIVER					
Babb (near)(30)	432	88	Apr-Sept		492
	375	88	Apr-July		427

- (21) Adjusted for storage in Canyon Ferry and Tiber Reservoirs.  
 (22) Adjusted for storage in Canyon Ferry, Tiber and Fort Peck Reservoirs.  
 (29) Adjusted for storage in Canyon Ferry, Tiber, Fort Peck, Buffalo Bill, Boysen and Yellowtail Reservoirs. Sum Yellowstone River near Sidney and Missouri River near Culbertson.  
 (30) Adjusted for storage in Lake Sherburne.





# STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	FORECAST PERIOD	Last Year Average

## YELLOWSTONE RIVER BASIN

YELLOWSTONE RIVER					
Corwin Springs (at)	2150	114	Apr-Sept	2091	1880
	1800	114	Apr-July	1796	1575
YELLOWSTONE RIVER					
Livingston (near)	2520	119	Apr-Sept		2122
	2100	119	Apr-July		1769
BOULDER RIVER					
Big Timber (at)	395	114	Apr-Sept		347
	370	113	Apr-July		327
STILLWATER RIVER					
Absarokee (near)(25)	645	116	Apr-Sept		558
	555	117	Apr-July		474
CLARKS FORK RIVER					
Chance (at)	635	109	Apr-Sept		582
	580	109	Apr-July		530
ROCK CREEK					
Red Lodge (near)	117	110	Apr-Sept	103	106
	92.0	112	Apr-July	76.6	82.1
YELLOWSTONE RIVER					
Billings (at)	4650	118	Apr-Sept	4160	3944
	4100	120	Apr-July	3664	3400
BIG HORN RIVER					
St. Xavier (near)(26)	1720	100	Apr-Sept	1620	1719
	1625	100	Apr-July	1549	1625
LITTLE BIG HORN RIVER					
Lodgegrass (near)(28)	192	156	Apr-Sept		123
	170	156	Apr-July		109
YELLOWSTONE RIVER					
Miles City (at)(27)	6670	114	Apr-Sept		5850
	5900	114	Apr-July		5177
YELLOWSTONE RIVER					
Sidney (near)(27)	6800	112	Apr-Sept		6069
	6100	112	Apr-July		5454

(25) Adjusted for storage in Mystic Lake.

(26) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake and Yellowtail Reservoirs.

(27) Adjusted for storage in Buffalo Bill, Boysen and Yellowtail Reservoirs.

(28) Sum Little Big Horn below Pass Creek and Lodgegrass Creek near Wyola.



# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## COLUMBIA RIVER BASIN

### KOOTENAI RIVER

Bald Eagle Peak	5700	4/03	133	54.7	76.5	-
Banfield Mountain	5600	3/31	59	23.3	28.5	-
Banfield Mountain Pillow	5600	3/31	SP	19.3	25.1	-
Baree Creek	5500	4/01	112	42.6	49.5	49.6
Baree Midway	4600	4/01	94	35.5	41.2	-
Baree Trail	3800	4/01	32	13.2	17.8	7.8
Bear Mountain	5400	4/02	128	54.4	75.5	-
Bristow Creek	3900	3/31	35	13.7	17.9	-
Brush Creek	5000	3/26	41	13.0	13.9	13.1
Brush Creek Timber	5000	3/26	36	11.5	12.4	11.7
Cedar Grove	4100	4/03	40	13.5	14.9	-
Davis Creek	5400	4/01	55	21.5	30.1	-
Fernie	3500	3/31	23	7.6	-	8.8
Field	4200	3/30	15	3.1	4.4	5.8
Garver Creek	4250	4/01	32	11.1	17.2	-
Garver Creek Pillow	4250	4/01	SP	9.0	13.1	-
Glacier	4100	3/26	66	22.4	27.0	28.7
Graves Creek	4300	3/30	53	18.9	21.1	19.5
Gray Creek	5100	3/30	40	11.4	17.1	19.2
Halverson Creek	4850	4/02	105	41.6	58.0	-
Hawkins Lake	6450	4/01	63	23.4	39.4	-
Hawkins Lake Pillow	6450	4/01	SP	21.4	35.3	-
Keeler Creek	3300	4/02	29	11.4	21.4	-
Kicking Horse	5400	3/29	35	9.4	12.6	15.2
Kimberley	3800	3/29	16	4.8	9.4	7.5
Lost Soul	4800	3/31	45	16.5	20.5	-
Marble Canyon	5000	3/30	33	6.6	13.4	13.2
Morrissey Ridge	6100	3/30	57	19.9	31.4	29.4
New Fernie	4100	3/31	38	13.1	-	15.8
Poorman Creek	5100	4/03	86	33.3	48.5	-
Poorman Creek Pillow	5100	4/03	SP	19.2	35.6	-
Red Mountain	6000	3/30	48	16.1	23.3	20.3
Sinclair Pass	4500	3/30	16	3.2	6.1	5.2
Stahl Peak	6050	3/30	95	35.1	44.2	-
Sullivan Mine	5100	3/30	33	10.0	18.7	14.6
Upper Elk River	4400	3/26	17	5.0	9.2	7.4
Weasel Divide	5450	3/30	80	30.0	39.0	35.3

SP - Snow pillow observation - water content only.





# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
					Last Year	Average

## FLATHEAD RIVER

Bassoo Peak	5150	4/01	39	12.8	14.4	12.2
Beaver Lake	5900				23.6	24.0
Big Creek	6750	4/01	134	51.2	45.8	46.7
Camp Misery	6400	3/31	134	51.6	51.7	46.8
Desert Mountain	5600	3/27	44	16.7	18.1	16.3
Fatty Creek	5500	4/01	87	29.8	24.2	22.8
Griffin Creek Divide	5150	4/01	42	13.2	13.8	12.6
Gunsight Lake	6300				38.6	41.0
Hell Roaring Divide	5770	3/31	83	31.4	33.5	33.1
Holbrook	4530	4/03	34	11.4	12.0	10.4
Kishenehn	3890	3/25	27	7.1	10.3	9.6
Logan Creek	4300	3/26	28	8.4	9.3	8.6
Marias Pass	5250	3/26	67	20.1	17.0	18.8
Mineral Creek	4000	4/01	58	19.0	19.7	21.4
Noisy Creek	3600	3/31	20	7.6	-	-
North Fork Jocko	6330	4/03	141	49.6	44.8	47.2
Spotted Bear Mountain	7000				12.3	15.1
Trinkus Lake	6100				42.0	44.2
Twin Creeks	3580				9.4	11.4
Upper Holland Lake	6200				35.2	36.1

## CLARK FORK RIVER

Black Pine	7100	3/31	47	13.4	17.6	14.1
Black Pine Pillow	7100	3/31	SP	13.3	16.0	14.1
Combination	5600	3/31	24	6.2	-	-
Copper Creek	5700	4/06	42	14.6	16.2	15.1
Cotter Mine	6250	4/06	57	23.6	21.8	17.2
Coyote Hill	4200	4/02	45	14.2	9.4	10.4
El Dorado Mine	7800	4/03	90	25.0	26.1	21.2
Fred Burr Pass	8000	3/31	79	24.8	28.6	26.6
Gold Creek Lake	7200	4/03	68	17.6	19.8	15.9
Heart Lake Trail	4800	3/27	57	20.8	25.0	23.0
Hoodoo Basin	6000	3/27	122	47.8	56.1	-
Hoodoo Basin Pillow	6000	3/31	SP	48.1	-	-
Hoodoo Creek	5900	3/27	117	44.1	52.4	50.6
Intergaard	6450	4/01	31	7.9	9.2	8.5
Lookout	5250	3/31	98	34.6	44.7	38.4
Lubrecht Forest No. 3	5450	4/01	26	7.6	10.6	7.4
Lubrecht Forest No. 4	4650	4/01	11	3.5	6.8	2.9
Lubrecht Forest No. 6	4040	4/01	8	3.0	6.2	3.0
Red Lion	7100	3/31	58	16.5	18.4	16.6
Skalkaho Summit	7260	4/02	85	27.2	28.8	26.4
Slide Rock Mountain	7100	4/01	51	15.0	18.2	15.4
Southern Cross	6500	4/01	27	6.8	7.2	7.4
Storm Lake	7780	3/30	57	14.0	16.3	14.6
Stuart Mill	6500	4/01	29	7.1	7.9	7.1
Stuart Mountain	7400	3/31	95	34.0	-	32.2
TV Mountain	6800	3/30	64	20.7	22.6	18.5



# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## BITTERROOT RIVER

Ambrose	6480	3/26	43	11.6	13.8	13.7
Coyote Meadows Trail	7000	4/02	62	19.8	20.8	-
East Fork R. S.	5400	3/31	19	6.2	5.8	7.1
Gibbons Pass	7100	3/26	70	24.3	27.0	23.0
Kit Carson	5020	4/01	30	10.2	9.2	8.6
Lolo Pass	5230	3/25	82	30.4	31.0	33.8
Lost Horse	5940	3/30	95	32.9	32.9	33.0
Moose Creek	6200	3/30	58	17.9	18.2	16.2
Nez Perce Camp	5680	4/01	52	16.4	14.6	15.2
Nez Perce Pass	6570	4/01	58	18.8	17.4	16.8
Saddle Mountain	7940	3/31	78	26.4	28.6	25.8
Saddle Mountain Pillow	7940	3/31	SP	27.6	31.2	-
Savage Pass	6600	3/26	70	23.3	28.0	28.6
Twelvemile Creek	5600	3/30	68	24.1	21.7	-
Twelvemile Creek Pillow	5600	3/30	SP	19.8	19.2	-
Twin Lakes	6510	3/30	116	40.7	42.1	45.0
Twin Lakes Pillow	6400	3/30	SP	41.5	40.2	-

SP - Snow pillow observation - water content only.





# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## MISSOURI RIVER BASIN

### BEAVERHEAD RIVER

Bloody Dick	7600	4/02	40	12.4	13.6	11.1
Blue Ledge Mine	6700	3/29	50	17.0	36.0	15.1
Camp Creek	6800	3/30	35	9.6	22.5	9.0
Carter Creek	7400	3/30	36	8.9	5.3	5.8
Dad Creek Lake	8400				17.6	13.0
Elk Horn Springs	7800	3/31	40	10.0	12.4	9.8
Gold Stone	8100	4/02	53	17.2	18.0	14.8
Kilgore	6200	3/29	42	14.1	19.9	8.9
Lakeview Canyon	6930	3/30	41	11.5	24.2	11.5
Lakeview Ridge	7400	3/30	36	11.3	21.0	10.0
Lemhi Pass	7480	4/01	38	9.5	12.1	8.5
Lemhi Ridge	8100	4/01	37	9.4	11.2	-
Sawtelle Mountain	8715	3/31	98	34.8	49.4	-
Trail Creek	7090	4/01	34	8.6	11.6	8.4
White Pine Ridge	8850				5.8	5.2

### RUBY RIVER

Branham Lakes	8850	3/31	104	36.0	33.5	-
Clover Meadow	8600				19.7	16.0
Divide	7900				16.2	9.7
Middle Mill Creek	7850	3/31	70	21.0	19.0	-
Notch	8500				19.6	13.6
Smuggler Mine	6960	3/31	51	13.6	12.2	-

### BIG HOLE RIVER

Abundance Lake	8800				24.4	19.8
Calvert Creek	6450	4/03	48	13.6	-	-
Darkhorse Lake	8600				30.6	27.0
Foolhen	8280				20.1	17.8
Jahnke Lake Trail	7200	4/02	40	11.8	-	-
Mudd Lake	7650	4/03	58	18.4	23.6	-
Palisade Creek	8250	4/03	94	32.9	34.6	-
Slag-A-Melt Lake	8750				29.8	-

### JEFFERSON RIVER

Berry Meadow	7300	3/27	30	7.7	8.6	7.6
Copper Mountain	7700	3/31	47	12.9	11.7	-
Nez Perce Creek	6500	3/31	26	6.8	7.6	-
Picnic Grounds	6500	4/01	24	5.0	6.2	4.6
Pipestone Pass	7200	3/30	27	6.0	7.8	6.0
Rocker Peak	8000	3/27	56	16.0	16.4	-
Rocker Peak Pillow	8000	3/27	SP	14.6	16.0	-
Uncle Sam Gulch	6500	3/27	31	8.4	7.4	-



Table 1: Summary of Data						Notes	
Category	Sub-category	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6
Group A	Item 1	10	20	30	40	50	60
	Item 2	15	25	35	45	55	65
	Item 3	20	30	40	50	60	70
Group B	Item 4	25	35	45	55	65	75
	Item 5	30	40	50	60	70	80
	Item 6	35	45	55	65	75	85
Group C	Item 7	40	50	60	70	80	90
	Item 8	45	55	65	75	85	95
	Item 9	50	60	70	80	90	100
Group D	Item 10	55	65	75	85	95	105
	Item 11	60	70	80	90	100	110
	Item 12	65	75	85	95	105	115
Group E	Item 13	70	80	90	100	110	120
	Item 14	75	85	95	105	115	125
	Item 15	80	90	100	110	120	130
Group F	Item 16	85	95	105	115	125	135
	Item 17	90	100	110	120	130	140
	Item 18	95	105	115	125	135	145
Group G	Item 19	100	110	120	130	140	150
	Item 20	105	115	125	135	145	155
	Item 21	110	120	130	140	150	160
Group H	Item 22	115	125	135	145	155	165
	Item 23	120	130	140	150	160	170
	Item 24	125	135	145	155	165	175
Group I	Item 25	130	140	150	160	170	180
	Item 26	135	145	155	165	175	185
	Item 27	140	150	160	170	180	190
Group J	Item 28	145	155	165	175	185	195
	Item 29	150	160	170	180	190	200
	Item 30	155	165	175	185	195	205

# SNOW

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average
MADISON RIVER						
Big Springs	6500	3/31	67	23.2	27.2	20.8
Black Canyon	7850	3/28	98	35.6	42.6	34.6
Black Moose	8125	3/28	107	39.2	47.0	40.4
Call Road	8050				10.9	10.8
Four Mile	6900	3/30	44	10.0	10.4	8.0
Hebgen Dam	6550	3/31	47	13.6	12.3	11.3
Island Park	6315	3/31	58	19.4	23.4	15.6
Jack Creek	7500	3/31	30	7.2	6.0	6.0
Lake Creek	6100	4/01	34	10.6	11.2	7.8
Latham Springs	7650	3/28	97	33.6	40.2	33.5
Lion Mountain	8760	3/30	69	21.7	28.2	-
Lion Mountain Pillow	8760	3/30	SP	15.6	-	-
Lower Twin	7900	3/30	88	25.2	22.9	19.0
Lucky Dog	6900	3/28	80	26.4	30.8	24.8
Madison Plateau	7750	3/31	67	23.6	31.6	-
Madison Plateau Pillow	7750	3/31	SP	25.2	32.0	-
Meridian Creek	7000	4/01	38	11.1	16.8	9.5
Norris Basin	7500	4/02	34	12.3	11.9	10.1
North Meadow	7500	3/30	44	9.6	11.2	7.9
Old Road	7250	3/28	85	29.8	34.8	27.3
Poachers Cabin	8000	3/28	95	30.6	40.6	33.6
Potomageton Park	7150	3/30	53	15.4	20.2	15.4
Sentinel Creek	8300	3/30	81	25.0	30.8	23.6
Soap Bogus Divide	7600	4/01	62	20.6	23.7	-
Targhee Pass	7000	3/31	52	15.6	27.0	13.8
Tepee Creek	8000	4/01	55	17.6	25.2	13.4
Valley View	6500	3/31	51	16.4	28.1	15.9
West Yellowstone	6700	3/31	39	12.3	17.0	10.8
West Yellowstone Pillow	6700	3/28	SP	7.3	12.6	-
Whiskey Creek	6800	3/31	64	22.0	30.6	-

## GALLATIN RIVER

Arch Falls	7350	3/30	68	19.2	11.6	12.6
Bear Basin	8150	3/27	85	26.4	21.0	20.2
Bridger Bowl	7250	3/31	106	38.6	26.6	27.6
Bridger Bowl Pillow	7250	3/31	SP	36.8	25.8	26.6
Carrot Basin	9000	4/01	105	39.9	49.4	-
Carrot Basin Pillow	9000				36.3	-
Devils Slide	8100	3/30	105	32.6	20.2	22.4
Hood Meadow	6600	4/01	54	16.2	7.1	9.8
Lick Creek	6860	3/30	62	15.5	6.0	10.2
Lick Creek Pillow	6860	3/30	SP	15.7	6.2	10.1
Little Park	7400	3/27	64	19.3	16.4	15.4
Maynard Creek	6210	3/31	77	26.4	16.2	-
Maynard Creek Pillow	6210	3/31	SP	17.6	11.5	-
New World	6700	3/30	57	17.3	11.6	11.0
Shower Falls	8100	3/30	112	36.7	25.8	26.8
Shower Falls Pillow	8100	3/30	SP	32.0	22.1	23.5
Twenty-One Mile	7150	3/31	53	17.0	26.2	17.4

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Average based on 1953-67 period. SP - Snow pillow observation - water content only.

Name		Address		Occupation		Religion		Political Party		Social Status	
John Smith		123 Main St		Teacher		Methodist		Republican		Middle Class	
Mary Jones		456 Oak Ave		Homemaker		Catholic		Democrat		Working Class	
Robert Brown		789 Elm St		Engineer		Protestant		Republican		Upper Middle Class	
Elizabeth White		101 Pine St		Nurse		Anglican		Liberal		Middle Class	
James Wilson		202 Cedar St		Farmer		Baptist		Conservative		Rural Class	
Sarah Davis		303 Birch St		Shopkeeper		Jewish		Democrat		Middle Class	
Thomas Miller		404 Spruce St		Lawyer		Presbyterian		Republican		Upper Middle Class	
Anna Clark		505 Willow St		Librarian		Unitarian		Liberal		Middle Class	
George Taylor		606 Ash St		Merchant		Quaker		Conservative		Upper Middle Class	
Charlotte Adams		707 Hickory St		Artist		Atheist		Liberal		Middle Class	
William Baker		808 Sycamore St		Doctor		Agnostic		Republican		Upper Middle Class	
Margaret Green		909 Magnolia St		Musician		Spiritualist		Liberal		Middle Class	
Charles Hall		1010 Poplar St		Scientist		Deist		Republican		Upper Middle Class	
Elizabeth King		1111 Chestnut St		Writer		Humanist		Liberal		Middle Class	
Frank Lewis		1212 Walnut St		Businessman		Atheist		Conservative		Upper Middle Class	
Sophia Young		1313 Elm St		Teacher		Spiritualist		Liberal		Middle Class	
Edward Scott		1414 Oak Ave		Engineer		Agnostic		Republican		Upper Middle Class	
Mary Hill		1515 Pine St		Homemaker		Deist		Democrat		Working Class	
Richard Black		1616 Cedar St		Farmer		Humanist		Conservative		Rural Class	
Anna Gray		1717 Birch St		Shopkeeper		Spiritualist		Liberal		Middle Class	
Thomas Evans		1818 Spruce St		Lawyer		Atheist		Republican		Upper Middle Class	
Elizabeth Reed		1919 Willow St		Nurse		Deist		Liberal		Middle Class	
George Cook		2020 Ash St		Merchant		Humanist		Conservative		Upper Middle Class	
Charlotte Bell		2121 Hickory St		Artist		Spiritualist		Liberal		Middle Class	
William Turner		2222 Sycamore St		Doctor		Agnostic		Republican		Upper Middle Class	
Margaret King		2323 Magnolia St		Musician		Deist		Liberal		Middle Class	
Charles Hall		2424 Poplar St		Scientist		Humanist		Conservative		Upper Middle Class	
Elizabeth King		2525 Chestnut St		Writer		Spiritualist		Liberal		Middle Class	
Frank Lewis		2626 Walnut St		Businessman		Atheist		Republican		Upper Middle Class	
Sophia Young		2727 Elm St		Teacher		Deist		Liberal		Middle Class	
Edward Scott		2828 Oak Ave		Engineer		Humanist		Conservative		Upper Middle Class	
Mary Hill		2929 Pine St		Homemaker		Spiritualist		Democrat		Working Class	
Richard Black		3030 Cedar St		Farmer		Agnostic		Conservative		Rural Class	
Anna Gray		3131 Birch St		Shopkeeper		Deist		Liberal		Middle Class	
Thomas Evans		3232 Spruce St		Lawyer		Humanist		Republican		Upper Middle Class	
Elizabeth Reed		3333 Willow St		Nurse		Spiritualist		Liberal		Middle Class	
George Cook		3434 Ash St		Merchant		Atheist		Conservative		Upper Middle Class	
Charlotte Bell		3535 Hickory St		Artist		Deist		Liberal		Middle Class	
William Turner		3636 Sycamore St		Doctor		Humanist		Republican		Upper Middle Class	
Margaret King		3737 Magnolia St		Musician		Spiritualist		Liberal		Middle Class	
Charles Hall		3838 Poplar St		Scientist		Agnostic		Conservative		Upper Middle Class	
Elizabeth King		3939 Chestnut St		Writer		Deist		Liberal		Middle Class	
Frank Lewis		4040 Walnut St		Businessman		Humanist		Republican		Upper Middle Class	
Sophia Young		4141 Elm St		Teacher		Spiritualist		Liberal		Middle Class	
Edward Scott		4242 Oak Ave		Engineer		Atheist		Conservative		Upper Middle Class	
Mary Hill		4343 Pine St		Homemaker		Deist		Democrat		Working Class	
Richard Black		4444 Cedar St		Farmer		Humanist		Conservative		Rural Class	
Anna Gray		4545 Birch St		Shopkeeper		Spiritualist		Liberal		Middle Class	
Thomas Evans		4646 Spruce St		Lawyer							

# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## MISSOURI RIVER (MAIN STEM)

Boulder Mountain	7950	3/30	70	22.7	18.4	16.8
Chessman Reservoir	6200	3/26	19	4.1	5.8	4.2
Deadman Creek	6450	4/01	62	18.1	10.8	-
Deadman Creek Pillow	6450	4/01	SP	15.4	9.5	-
Elk Peak	8000	3/31	71	22.0	14.2	16.9
Grasshopper	7000	3/31	28	7.0	7.0	5.4
Kings Hill	7500	3/30	74	21.7	12.7	13.2
Stemple Pass	6600	3/26	37	8.6	10.5	10.8
Ten Mile Lower	6600	3/26	26	5.9	7.8	6.9
Ten Mile Middle	6800	3/25	37	9.4	12.6	10.8
Ten Mile Upper	8000	3/25	46	13.1	16.5	14.0

## SUN-TETON-MARIAS RIVERS

Badger Pass	6900				38.6	37.2
Blue Lake	5900				29.0	-
Cabin Creek	5200	3/31	26	6.6	8.2	7.3
Five-Bull	5700				11.2	6.9
Freight Creek	6000				14.7	16.6
Goat Mountain	7000	4/05	36	11.0	13.4	11.7
Mount Lockhart	6400	3/27	75	24.0	19.5	-
Mount Lockhart Pillow	6400	3/27	SP	29.8	17.4	-
Waldron	5600	3/27	47	12.0	9.8	-
Waldron Pillow	5600	3/27	SP	11.5	11.3	-
Wrong Creek	5700	4/03	47	14.1	12.0	16.0
Wrong Ridge	6800	4/02	64	23.1	17.3	21.9

## JUDITH RIVER

Avalanche	7100	4/02	112	36.0E	17.4	-
Crystal Lake	6100	4/02	80	23.8	9.0	12.8
Rock Creek	5600	4/02	56	16.0	7.0	-
Spur Park	8000	4/01	85	29.1	20.2	21.5
Spur Park Pillow	8000	4/01	83	28.2	19.0	-

## MUSSELSHELL RIVER

Daisy Peak	7600	3/24	43	12.3	10.4	-
Eagle Creek	7000	3/23	62	19.0	11.7	-
Forest Lake	6400	3/23	53	16.0	10.2	-
Haymaker	8050	3/30	65	17.6	12.8	-
Johnson Park	6450	3/24	28	8.0	6.6	-

SP - Snow pillow observation - water content only.

E - Estimated water content.





SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
					Last Year	Average
NAME	Elevation					

MILK RIVER

Bear Paw Ski Area	5200	3/31	37	12.0	-	-
Rocky Boy	4700	3/31	27	6.6	4.8	4.5
Rocky Boy Pillow	4700	3/31	SP	6.5	5.4	-

ST. MARY RIVER

Hudson Bay Divide	5800	3/31	62	18.0	15.7	18.9
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SASKATCHEWAN (BOW) RIVER

Bow River #1	5100	3/24	23	4.7	7.7	9.4
Chateau Lawn #8	5700	3/24	30	6.0	12.2	11.3
Mirror Lake #6	6600	3/24	28	6.0	12.6	12.7
Mount Eisenhower #10	5000	3/25	12	2.9	6.2	4.9
Upper Pipestone #2	5300	3/23	22	4.3	8.2	9.0

UPPER YELLOWSTONE RIVER

Bald Ridge	7500	4/02	58	18.2	11.1	12.5
Camp Senia	7890	3/31	55	11.4	5.5	6.4
Canyon	7750	4/06	51	16.3	18.0	16.1
Cooke Station	8150	3/26	70	23.9	21.0	-
Crevice Mountain	8400	3/25	38	11.3	11.0	8.8
East Entrance	7000	3/30	36	10.0	8.7	9.7
Fisher Creek	9100	3/26	108	41.0	39.8	-
Fisher Creek Pillow	9100	3/26	SP	38.4	35.0	-
Grizzly Peak	8400	3/30	95	19.4	10.2	16.5
Independence	8000	4/02	61	20.0	18.8	18.2
Lake Camp	7850	3/31	37	8.5	14.0	9.9
Lodgepole	8200	3/30	41	10.2	10.7	10.8
Lupine Creek	7300	4/04	40	11.6	10.9	10.3
Mill Creek	7500	3/31	62	18.7	12.7	-
Monument Peak	9000	4/02	82	28.4	26.6	24.8
Northeast Entrance	7400	3/29	41	10.8	9.2	9.1
Northeast Entrance Pillow	7350	3/29	SP	11.6	9.3	-
Porcupine R. S.	6500	4/02	40	11.7	6.1	7.6
Sacajawea	6550	3/31	68	23.0	15.4	13.0
South Fork Shields	8100	4/02	92	32.8	20.6	24.1
Sylvan Pass	7100	3/30	50	15.5	14.2	13.4
Thumb Divide	7900	3/30	58	23.2	27.4	22.5
Timberline Creek	8850	3/31	84	18.4	13.0	15.5
West Rosebud	7500	4/01	48	13.4	-	10.6
White Mill	8700	3/26	85	31.2	29.4	-

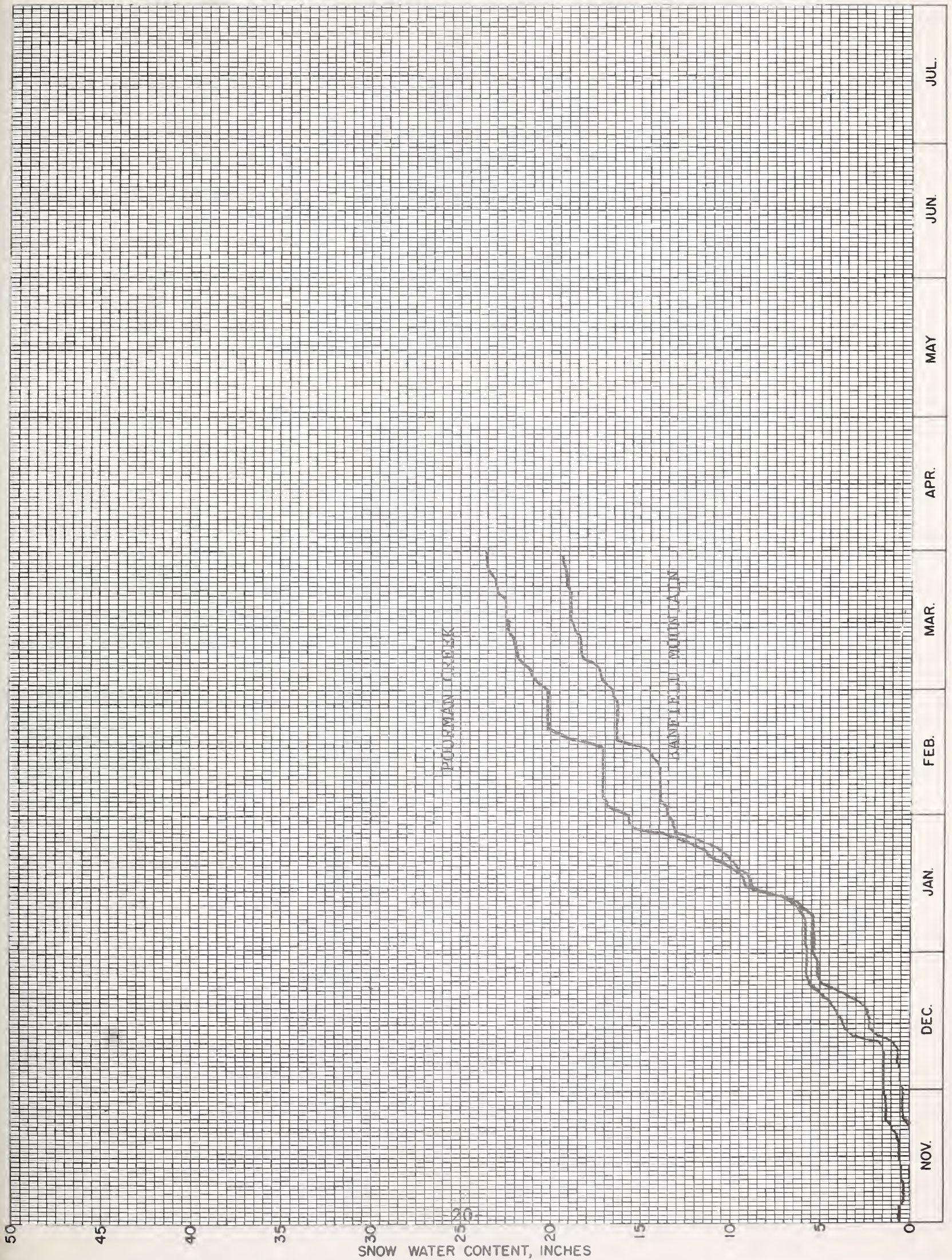
SP - Snow pillow observation - water content only.

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SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: KOOTENAI



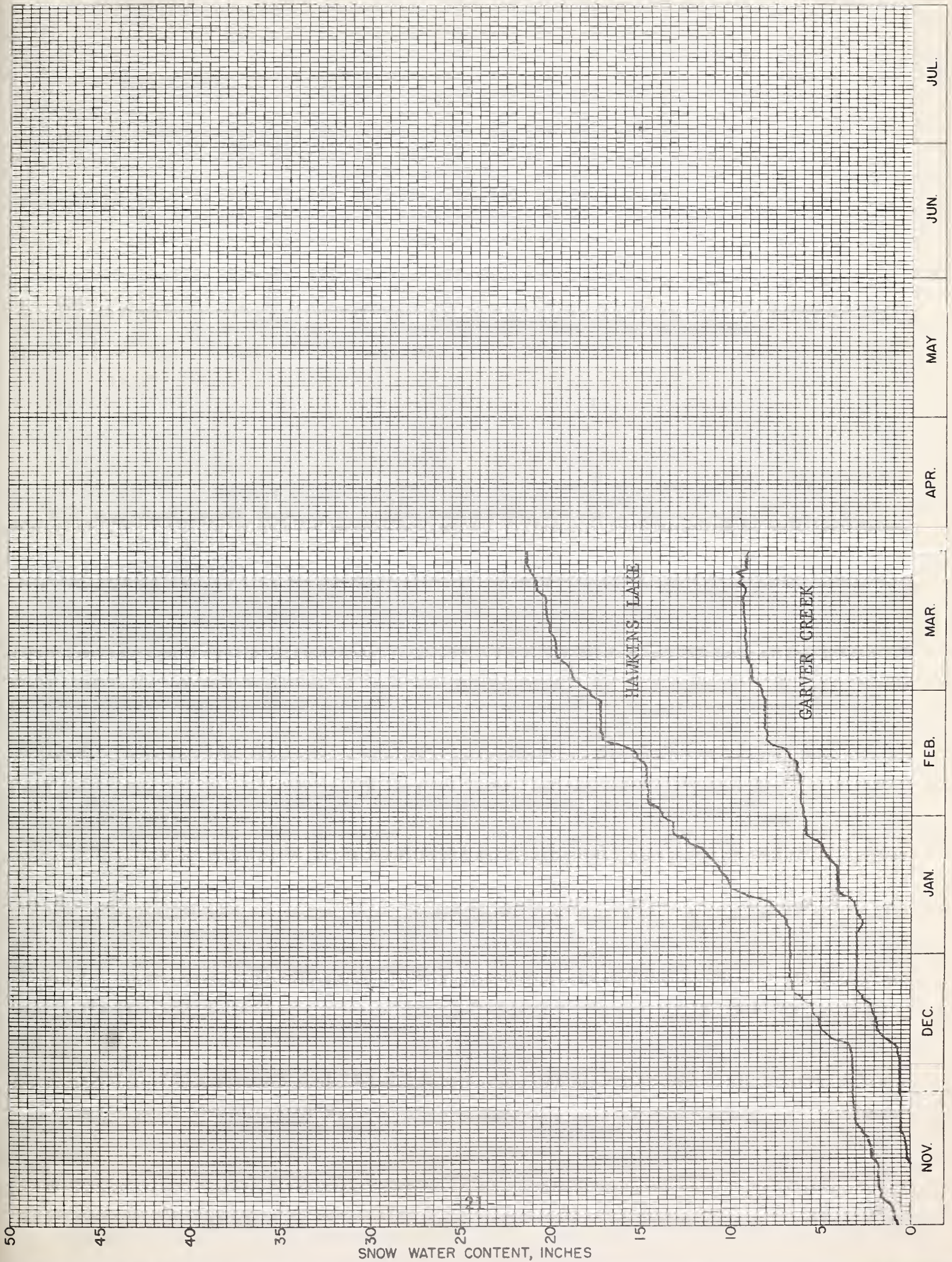






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: KOOTENAI



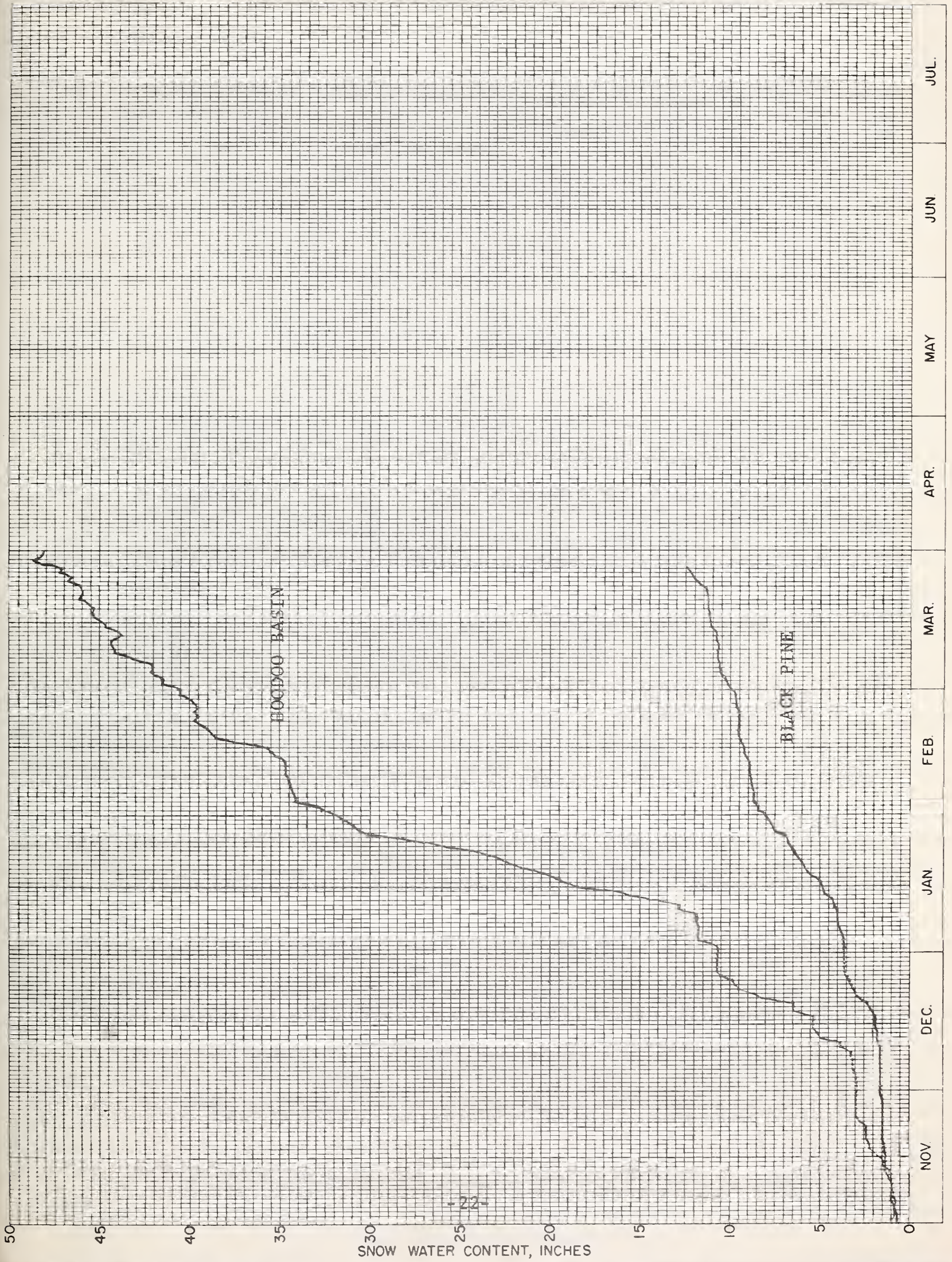






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: CLARK FORK



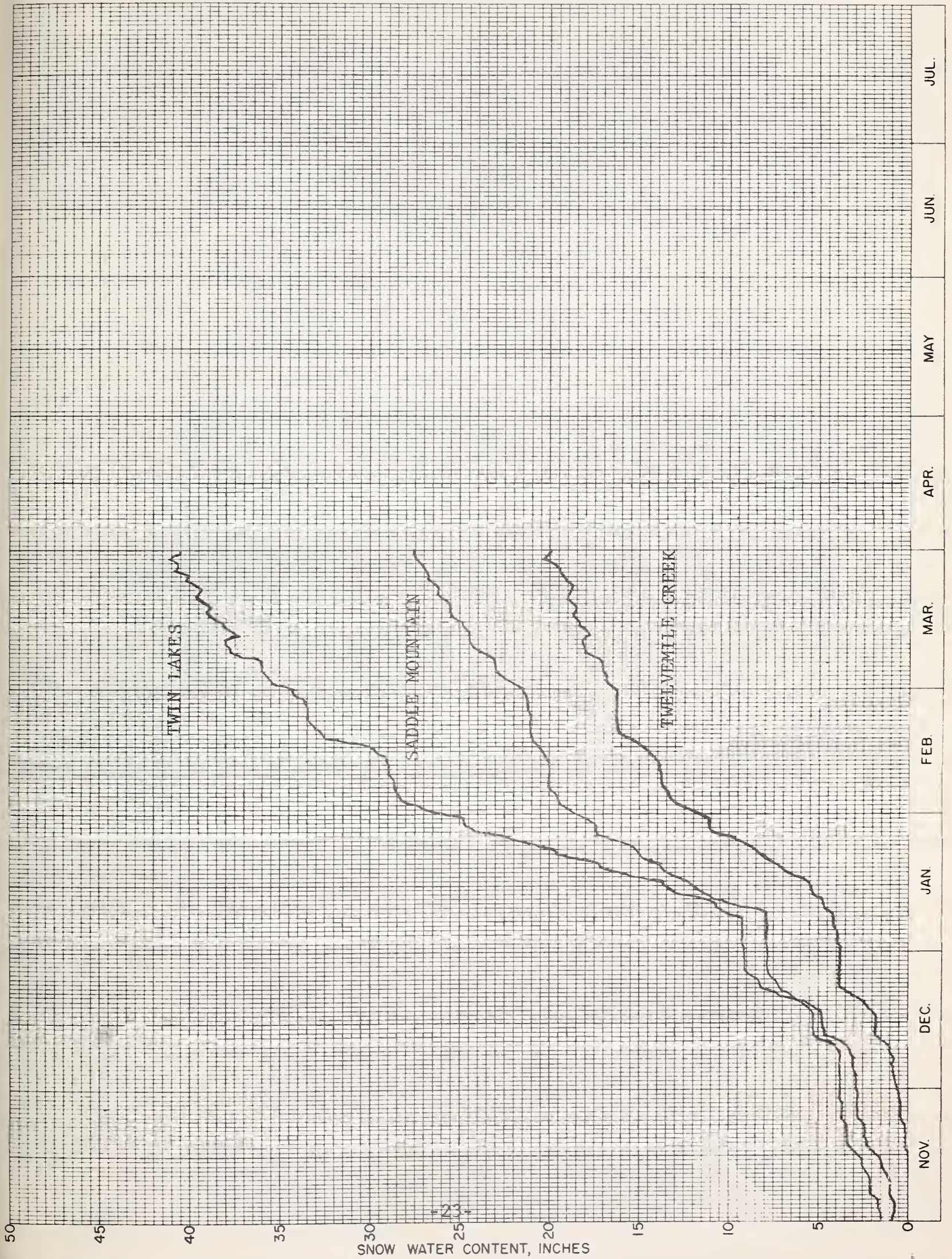






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: BITTERROOT



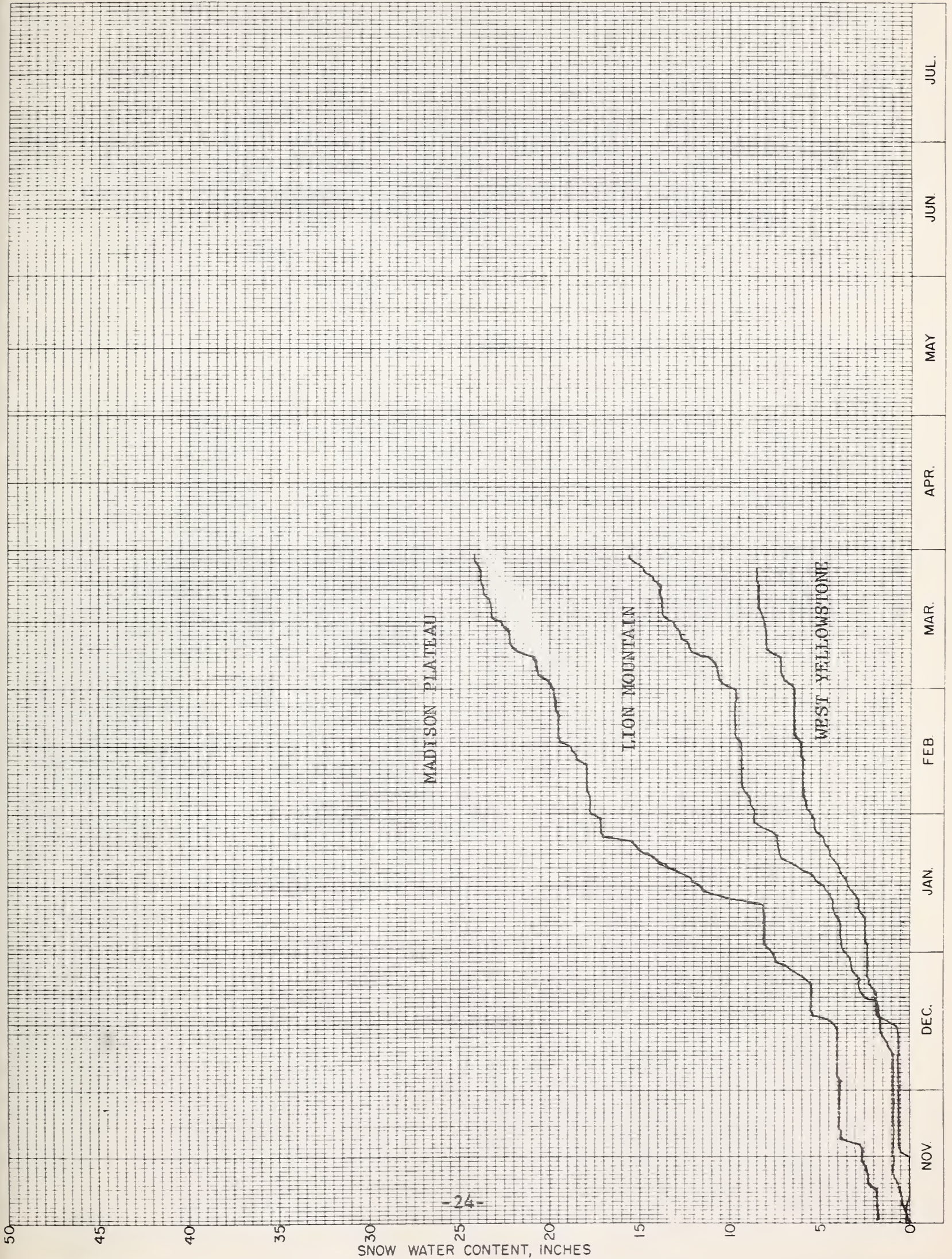






# SNOW PILLOW DATA WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: MADISON



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SNOW WATER CONTENT, INCHES

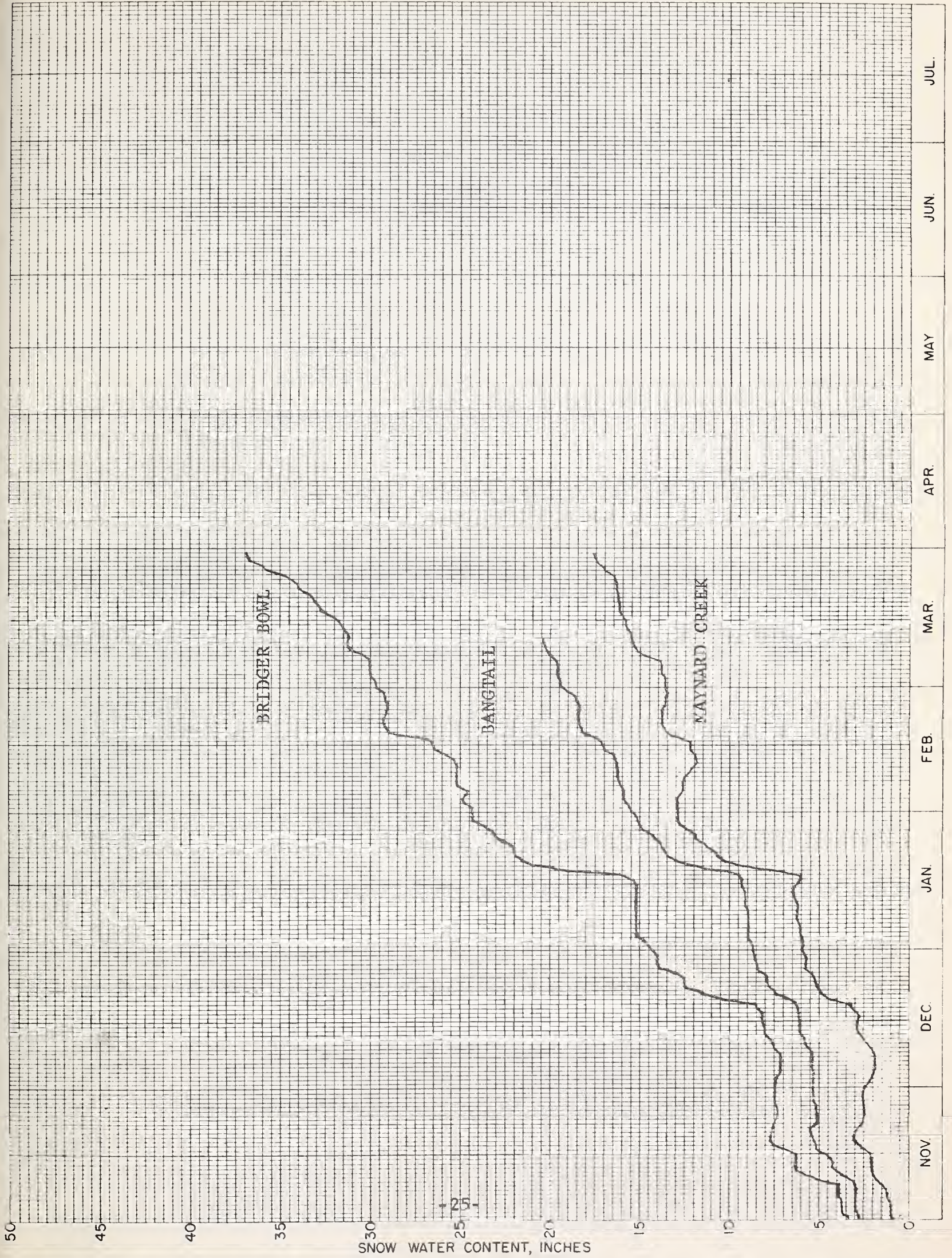






# SNOW PILLOW DATA WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: GALLATIN



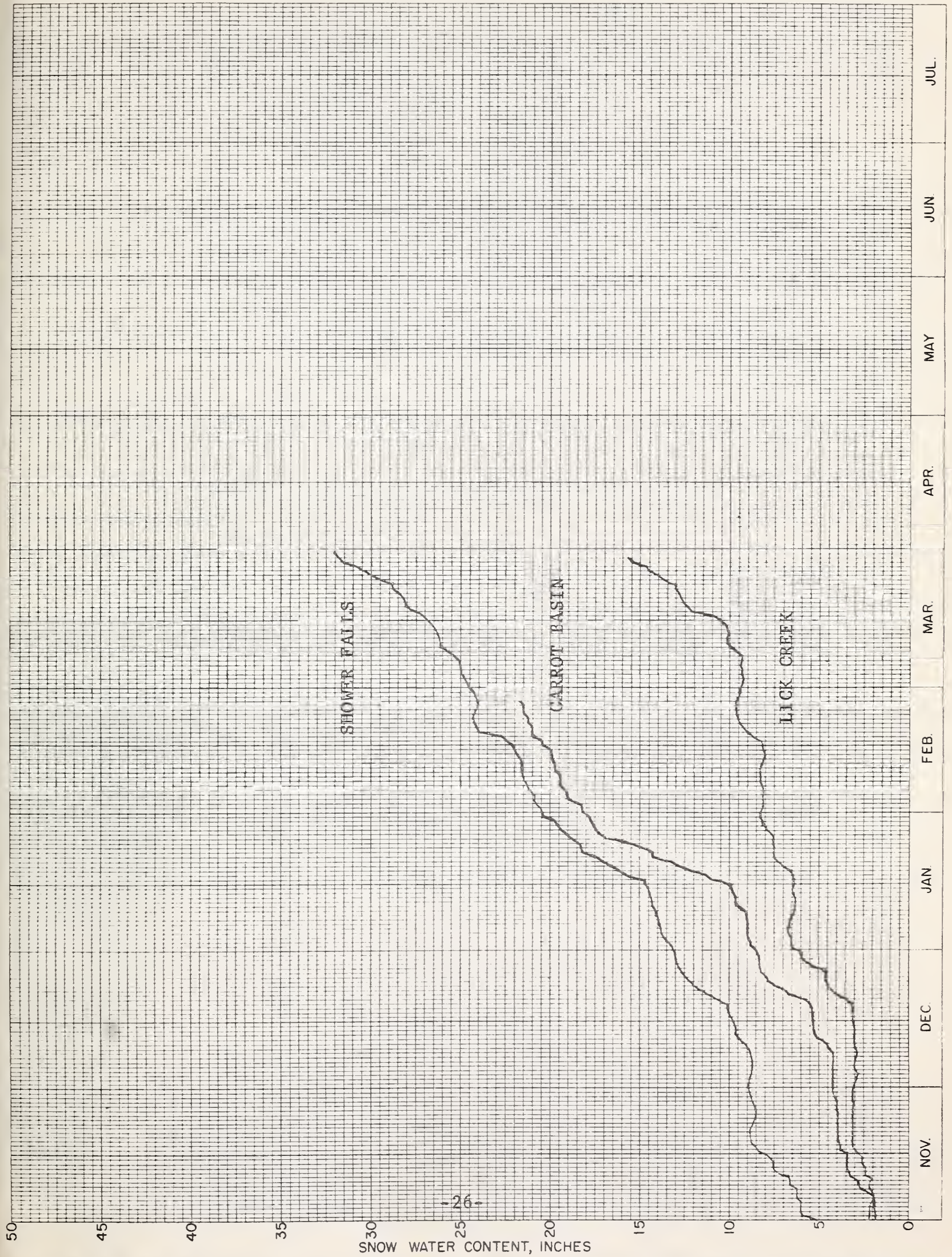






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: GALLATIN



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SNOW WATER CONTENT, INCHES

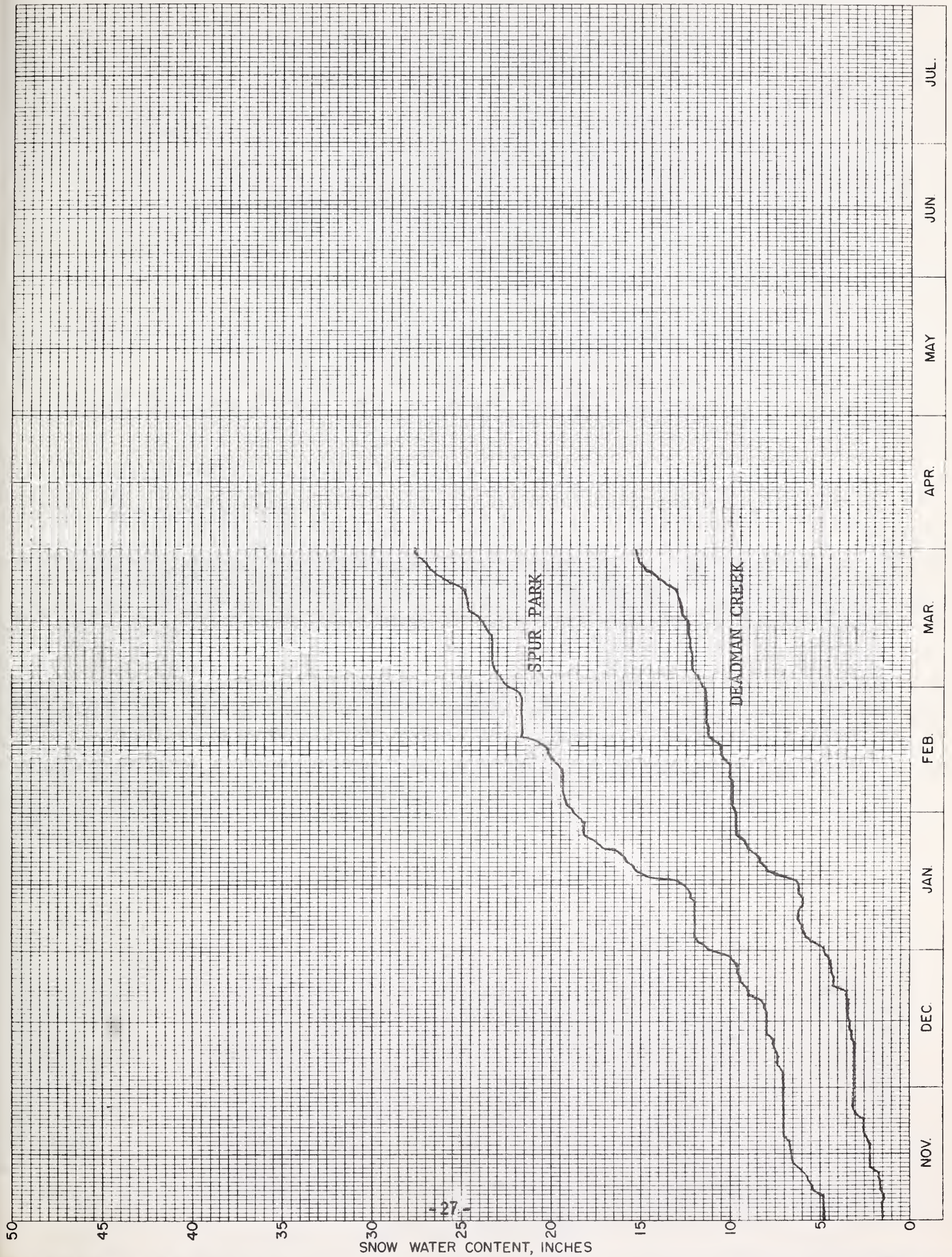






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: JUDITH-JEFFERSON-MISSOURI



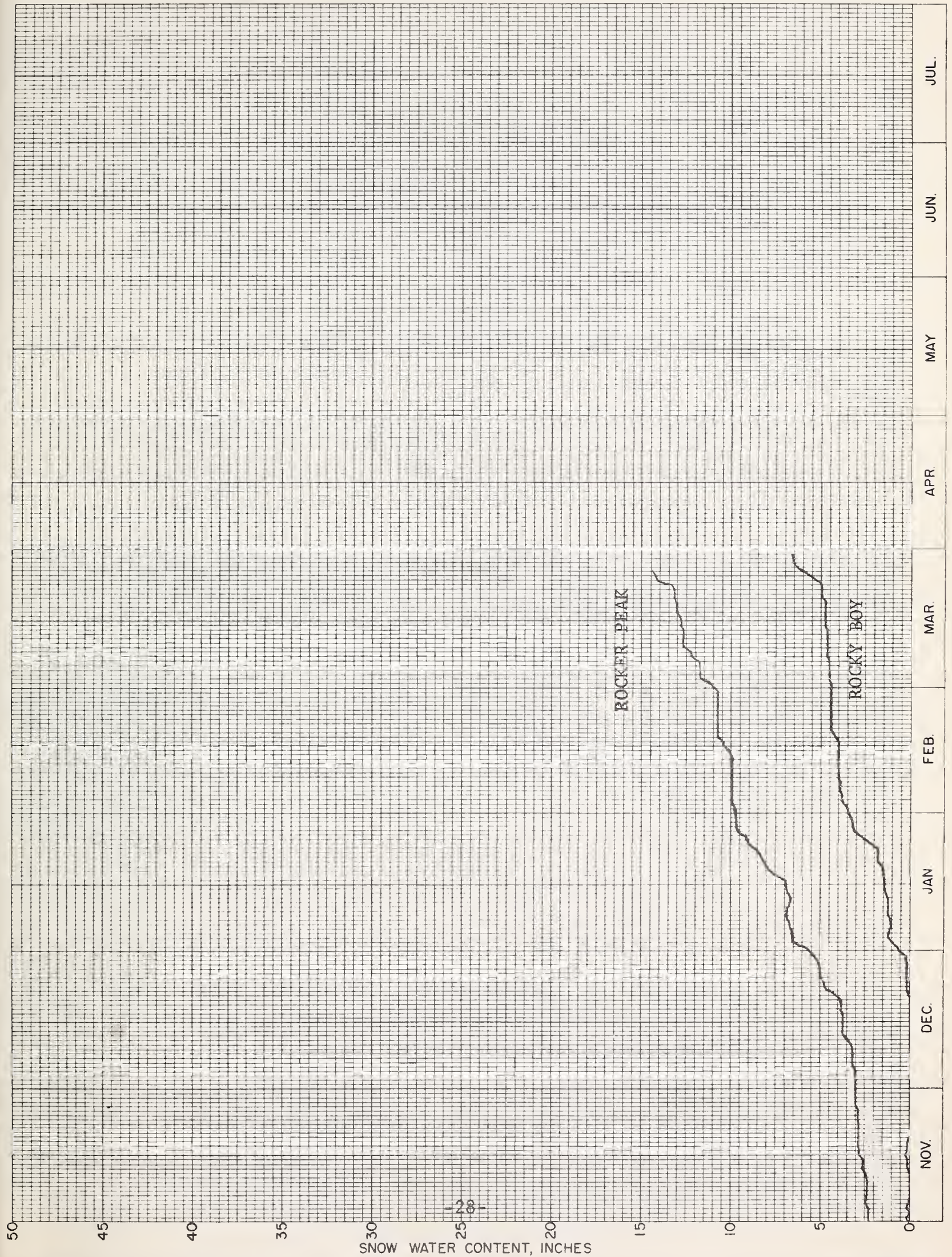






SNOW PILLOW DATA  
WATER YEAR 1970

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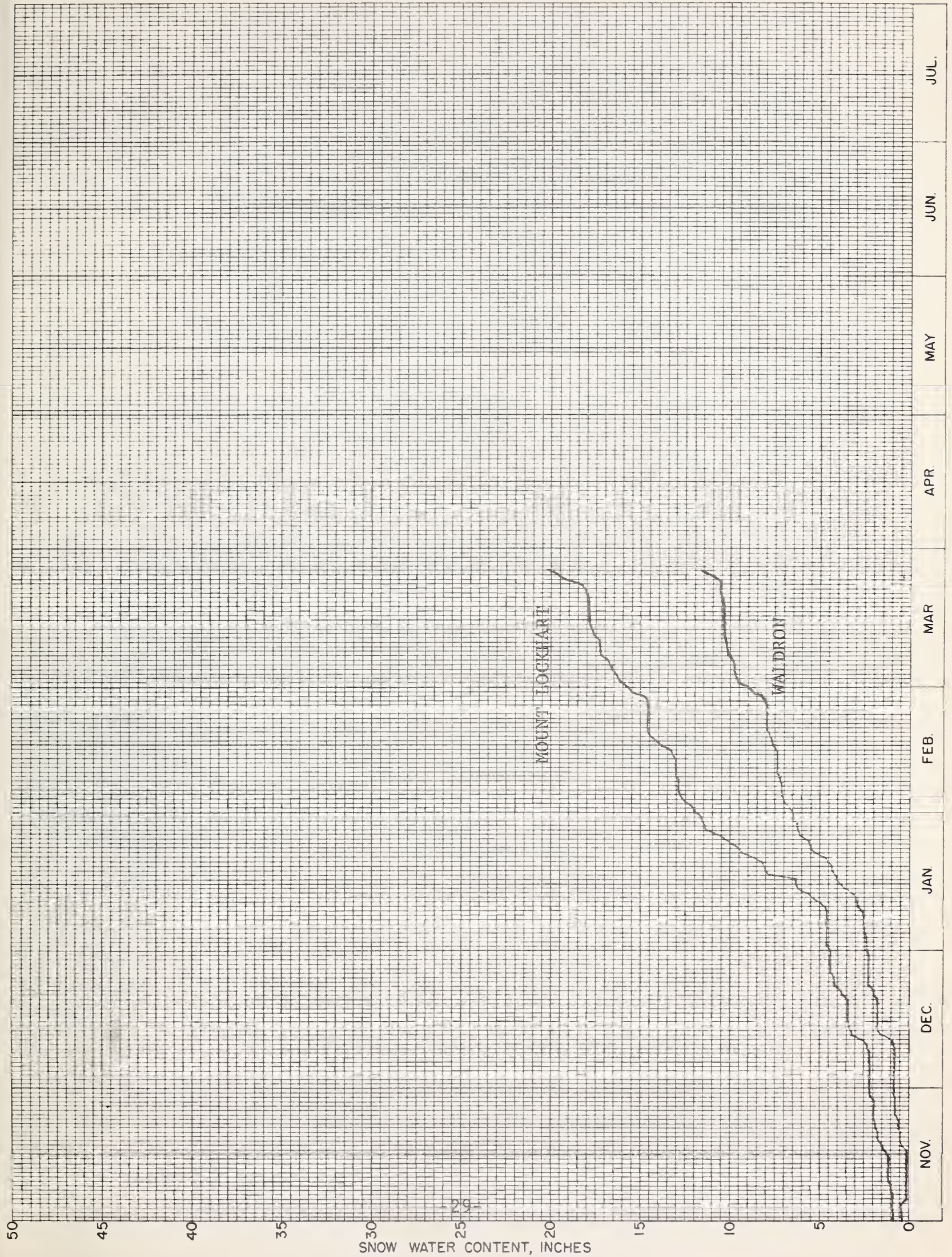






SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: SUN



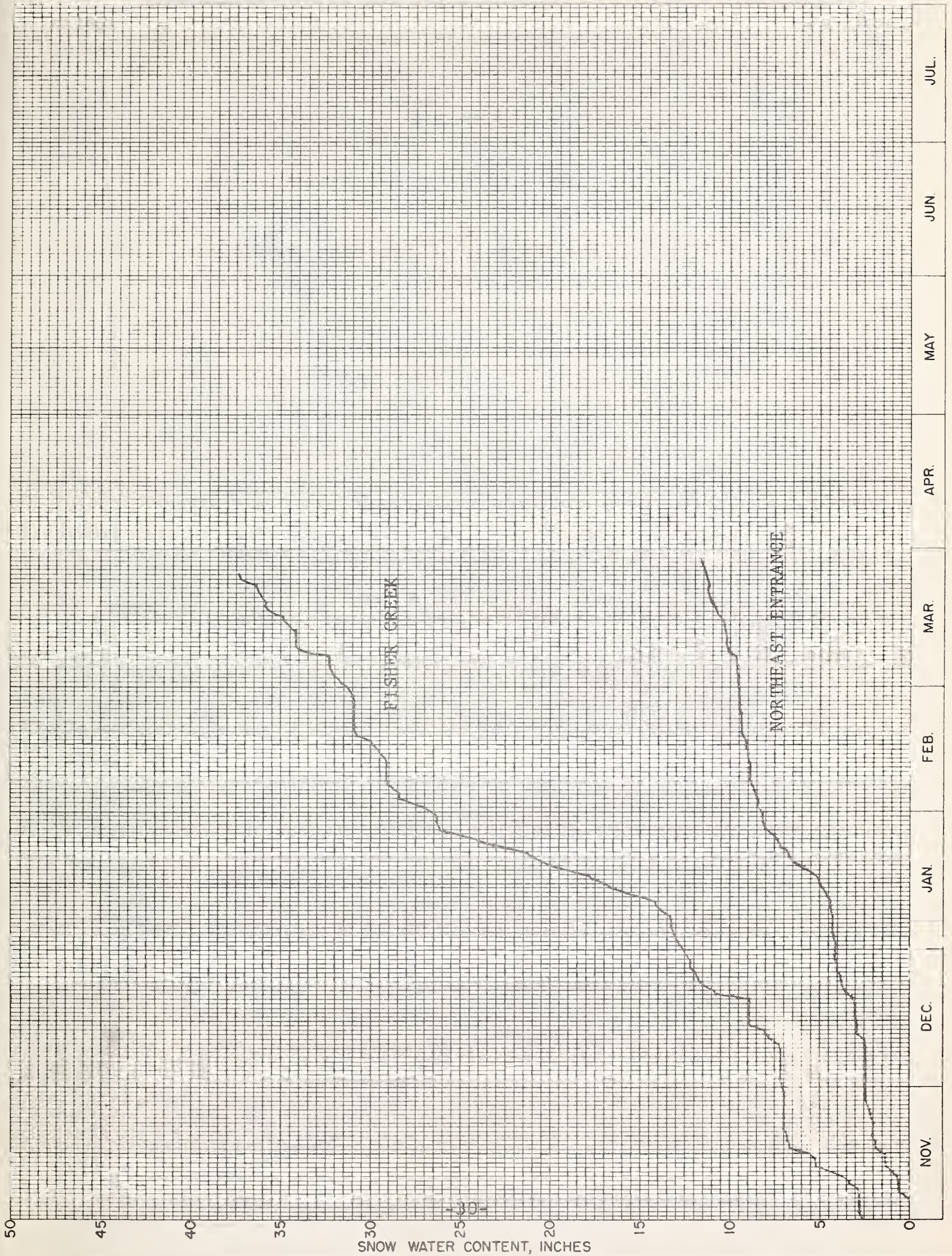






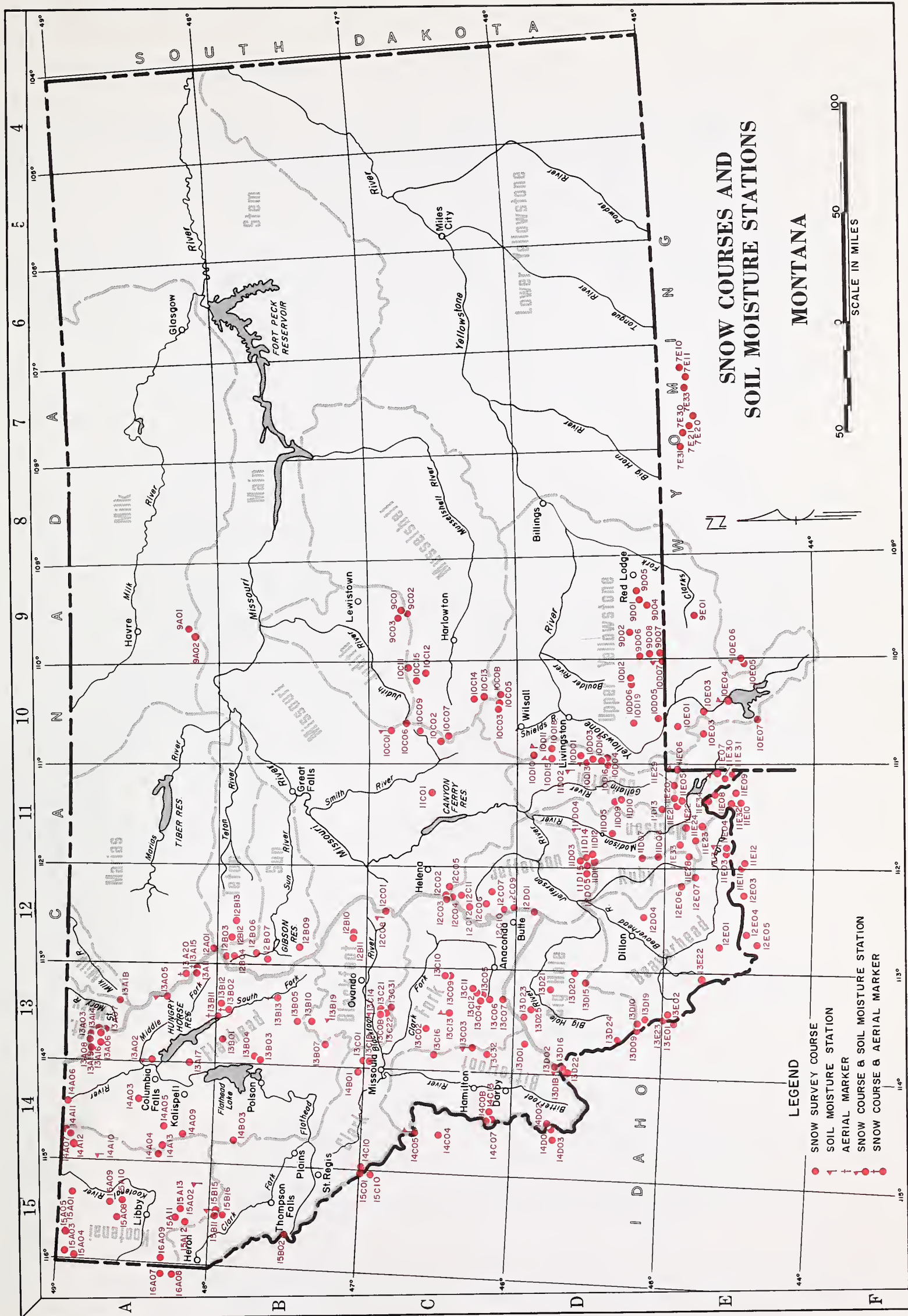
SNOW PILLOW DATA  
WATER YEAR 1970

No. \_\_\_\_\_ Elev. \_\_\_\_\_ Drainage: YELLOWSTONE











INDEX to MONTANA SNOW COURSES and SOIL MOISTURE STATIONS

SNOW COURSES

Number	Drainage Basin & Course Name	Elev.	Sec.	Typ.	Range	Record Began	Measuring Dates	Notes, By 2/
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
15A11	Bald Bald Peak	5100	6	2" N	31W	1969	3,4,5,5,5,6	1
15A08	Barber Lake	5500	4	32N	30W	1959	2,3,4,5,5,5,6	1
15111	Barber Lake	5500	36	26S	31W	1956	3,4,5,5,5,6	2
15B16	Barber Lake	4670	31	26N	30W	1966	3,4,5,5,5,6	1
15B15	Barber Lake	3800	5	25S	30W	1966	3,4,5,5,5,6	2
15A10	Barber Lake	3900	2	32N	30W	1969	3,4,5,5,5,6	1
15A04	Barber Lake	5000	12	30N	26W	1937	3,4,5	1,2
15A03	Barber Lake	5000	12	30N	26W	1969	3,4,5	1,2
15A03	Barber Lake	4100	35	28N	31W	1969	2,3,4,5,5,5,6	1
15A04	Barber Lake	4500	20	37N	32E	1969	2,3,4,5,5,5,6	1
15A05	Barber Lake	4250	18	37S	32E	1937	3,4,5,5,5,6	1
1A111	Barber Lake	4000	1	36S	25W	1969	3,4,5,5,5,6	1
15A13	Barber Lake	6450	18	37S	33W	1969	2,3,4,5,5,5,6	1
16A19	Barber Lake	3300	25	30S	35W	1969	3,4,5	1
15A19	Barber Lake	4000	31	32S	29W	1969	2,3,4,5,5,5,6	1
15A12	Barber Lake	5100	5	27S	31E	1969	2,3,4,5,5,5,6	1
15A01	Barber Lake	6000	4	36S	29W	1937	3,4,5,5,5,6	2
1A12	Barber Lake	6050	5	36S	25W	1969	3,4,5,5,5,6	1
1A07	Barber Lake	5450	20	37S	24W	1937	3,4,5,5,5,6	1
FLATHEAD RIVER								
14B03	Basco Peak	5150	11	24N	25W	1961	3,4,5	1,5
13A11	Beaver Lake	5900	31	28N	11W	1964	3,4,5	1
13B01	Beaver Lake	6350	7	22S	18W	1941	3,4,5, 6	1,5
13A17	Camp Henry	6400	20	28N	18W	1962	3,4,5	1,2
13A02	Desert Mountain	5600	24	31N	19W	1937	1,2,3,4,5, 6	1,2
13B04	Fatty Creek	5500	8	22N	18W	1962	3,4,5, 6	1,5
13B05	Flattop Mountain	5500	11	28N	25W	1960	3,4,5	1,5
14B09	Flattop Mountain Divide	5150	11	28N	25W	1960	3,4,5	1,5
13B12	Gull Lake	6300	35	26S	14W	1964	3,4,5	1,5
14A03	Hell Roaring Divide	5770	35	32S	22W	1962	1,2,3,4,5,5,5,6	1
13B13	Holbrook	4530	18	21S	13W	1951	1,2,3,4,5	1
14A06	Klahnehn	3890	14	37S	22W	1954	3,4,5	1
14A05	Logan Pass	4300	34	30N	24W	1934	3,4,5	1
13A05	Marion Pass	5250	34	30N	14W	1957	3,4,5	1,2
13A16	Mineral Creek	4000	29	35S	17W	1957	3,4,5	1,5
13B07	North Fork Jocko	6330	3	17S	17W	1941	3,4,5,5,5,6	1
13B02	Spotted Bear Mountain	7000	23	25S	19W	1948	1,2,3,4,5	1,5
13B01	Trifunus Lake	6100	9	25S	17W	1948	3,4,5	1
13B11	Twin Creeks	3580	24	26W	19S1	1,2,3,4,5	1	1
13B05	Upper Holland Lake	6200	28	20N	15W	1948	3,4,5	1
CLARK FORK RIVER								
13C13	Black Pine	7100	26	8N	15W	1959	1,2,3,4,5,5,5,6	1
12B11	Copper Creek	5700	1	13N	9W	1962	3,4,5	1,2
12B11	Cotton Mine	6250	2	14S	12W	1962	3,4,5	1,2
13B01	Coyote Hill	7800	12	18S	16W	1967	1,2,3,4,5	1,2
13B01	Frederick Mine	7800	12	6S	13W	1967	3,4,5	1
13C10	Gold Creek	7200	14	8S	12W	1969	3,4,5	1
14C10	Heart Lake Trail	4800	11	14N	27W	1965	1,2,3,4,5	1,2
15C10	Hoodoo Basin	6000	17	14N	27W	1967	1,2,3,4,5,5,5,6	1,2
15C01	Hoodoo Creek	5500	16	5N	13W	1936	2,3,4,5	1,2
13C04	Intergard	6550	6	5N	13W	1936	2,3,4,5	1,2
13C21	Lubrecht Forest No. 3	5450	19	13N	14W	1951	1,2,3,4,5	1
13C22	Lubrecht Forest No. 4	4650	23	13N	15W	1951	1,2,3,4,5	1
13C08	Lubrecht Forest No. 6	4040	11	13N	15W	1951	1,2,3,4,5	1
13C31	N. Fork Elk Creek	6250	20	13N	13W	1958	1,2,3,4,5,5,5,6	1
13C12	Red Lion	7100	22	6N	17W	1958	3,4,5	1
13C03	Skalkaho Summit	7260	30	6N	17W	1937	3,4,5,5,5,6	1
13C02	Saddle Rock Mountain	7100	35	10N	16W	1937	3,4,5	1
13C05	Southern Cross	6500	8	5N	13W	1936	3,4,5	1
13C16	Spring Gulch	7000	12	14N	13W	1961	1,2,3,4,5	1
13C07	Stuart Mill	6500	19	5N	13W	1936	1,2,3,4,5	1
13C01	Stuart Mountain	7600	6	12N	18W	1936	1,2,3,4,5,5,5,6	1
14C01	T.V. Mountain	6800	33	15N	19W	1956	1,2,3,4,5,5,5,6	1
BITTERROOT RIVER								
13C16	Ambrose	6480	28	9N	18W	1960	3,4,5	1
13C32	Coyote Meadows Trail	7000	20	4N	18W	1969	3,4,5	1
13C01	East Fork R.S.	5400	16	2N	17W	1937	3,4,5	1
13C02	Gibboney Pass	7100	4	2S	19W	1934	1,2,3,4,5,5,5,6	1,3
14C07	Lost Horse	5940	5	4N	23W	1960	3,4,5,5,5,6	1
14C02	Nez Perce Camp	5800	19	1S	23W	1937	3,4,5	1
14C01	Nez Perce Pass	6570	25	1S	24W	1937	3,4,5	1
13C22	Saddle Mountain	7940	3	2S	23W	1966	1,2,3,4,5,5,5,6	1
14C13	Ten Mile Creek	5600	54	3N	23W	1966	1,2,3,4,5,5,5,6	1
14C08	Twin Lakes	6310	32	3N	23W	1960	1,2,3,4,5,5,5,6	1
ST. MARY RIVER BASIN								
13A18	Nelson Bay Divide	5800	24	24N	14W	1962	3,4,5	3
13A03	Trout Lake No. 3	5600	1	35N	17W	1922	3,4,5	3,9
13A14	Trout Lake No. 9	4900	23	35N	16W	1955	3,4,5	3
13A07	Mount Allen No. 7	5700	27	35N	16W	1922	3,4,5	3,9
13A06	Mount Allen No. 6	5500	27	35N	16W	1922	3,4,5	3,9
13A08	Pearlman No. 8	5800	36	36N	17W	1937	3,4,5	3,9
MISSOURI RIVER BASIN								
13C16	Ambrose	6480	28	9N	18W	1960	3,4,5	1
13C32	Coyote Meadows Trail	7000	20	4N	18W	1969	3,4,5	1
13C01	East Fork R.S.	5400	16	2N	17W	1937	3,4,5	1
13C02	Gibboney Pass	7100	4	2S	19W	1934	1,2,3,4,5,5,5,6	1,3
14C07	Lost Horse	5940	5	4N	23W	1960	3,4,5,5,5,6	1
14C02	Nez Perce Camp	5800	19	1S	23W	1937	3,4,5	1
14C01	Nez Perce Pass	6570	25	1S	24W	1937	3,4,5	1
13C22	Saddle Mountain	7940	3	2S	23W	1966	1,2,3,4,5,5,5,6	1
14C13	Ten Mile Creek	5600	54	3N	23W	1966	1,2,3,4,5,5,5,6	1
14C08	Twin Lakes	6310	32	3N	23W	1960	1,2,3,4,5,5,5,6	1
ST. MARY RIVER BASIN								
13A18	Nelson Bay Divide	5800	24	24N	14W	1962	3,4,5	3
13A03	Trout Lake No. 3	5600	1	35N	17W	1922	3,4,5	3,9
13A14	Trout Lake No. 9	4900	23	35N	16W	1955	3,4,5	3
13A07	Mount Allen No. 7	5700	27	35N	16W	1922	3,4,5	3,9
13A06	Mount Allen No. 6	5500	27	35N	16W	1922	3,4,5	3,9
13A08	Pearlman No. 8	5800	36	36N	17W	1937	3,4,5	3,9
BEAVERHEAD RIVER								
13C10	Bloody Dick	7600	12	8S	16W	1968	3,4,5	1
12C04	Carew Creek	7400	22	8S	17W	1963	3,4,5	11
13C15	Elk Horn Spring	7800	21	14S	12W	1935	3,4,5	3
11C09	Gold Stone	8100	11	8S	16W	1948	3,4,5	1
11C04	Lakeview Canyon	6930	26	16S	2W	1948	1,2,3,4,5	10
11C03	Lakeview Ridge	7400	27	16S	2W	1948	1,2,3,4,5	10
13B01	Lamb Pass	7400	9	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S	15W	1948	3,4,5	1
13B12	Trail Pass	8900	14	10S				



# Agencies and Organizations Cooperating in Montana Snow Surveys

U. S. Forest Service  
Region I, Missoula, Montana  
Montana Forests and Ranger  
Districts

U. S. Geological Survey  
Helena, Montana  
Portland, Oregon

U. S. Army Corps of Engineers  
Portland, Oregon  
Seattle, Washington  
Walla Walla, Washington  
Omaha, Nebraska

U. S. Indian Irrigation Service  
St. Ignatius, Montana

U. S. Weather Bureau  
Helena, Montana  
Portland, Oregon  
Kansas City, Missouri

U. S. Bureau of Sports Fisheries  
and Wildlife  
Red Rock Lakes Refuge  
Monida, Montana

U. S. Bureau of Reclamation  
Billings, Montana  
Boise, Idaho

U. S. Bonneville Power Administration  
Portland, Oregon

U. S. Soil Conservation Service  
Montana, Wyoming, Idaho

Soil and Water Conservation Districts  
Montana Counties

U. S. National Park Service  
Yellowstone National Park  
Glacier National Park

Montana Power Company  
Butte, Montana

Montana Water Resources Board  
Helena, Montana

North Montana Branch Station  
Agricultural Experiment Station  
Havre, Montana

Montana State University  
Agricultural Experiment Station  
Bozeman, Montana

University of Montana  
School of Forestry  
Missoula, Montana

Water Rights Branch, Dept. of  
Lands and Forests  
Victoria, British Columbia

Department of Energy, Mines and  
Resources  
Calgary, Alberta

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generation, navigation,  
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with the Snow Survey"*